

WHAT IS CLAIMED IS:

1. An electronic power source voltage regulator, comprising:

an input port having a first input end and a second input end;

an output port having a first output end and a second output end,
wherein said second output end is electrically connected to said second
input end so as to provide an output voltage;

a switch set electrically connected between said input port and an AC
power source;

a capacitor having a first end electrically connected to said first input
end and a second end electrically connected to said first output end;

an inductor having a first end electrically connected to said first input
end; and

an electrical energy converter comprising an electrical energy storage
device, a first output terminal, and a second output terminal, wherein said
first output terminal is electrically connected to a second end of said
inductor, said second output terminal is electrically connected to said first
output end, and said energy converter transfers an electrical energy of
said storage device into said output voltage to be output so as to stabilize
said output voltage when a significant voltage difference of said AC
power source occurs.

2. The voltage regulator according to Claim 1, wherein said switch set
further comprises:

a first connecting configuration, wherein said first input and second
input ends are directly and electrically connected to said AC power
source when a voltage value of said AC power source is within a
pre-determined range; and

a second connecting configuration, wherein said first and second input ends are directly and electrically connected to each other when said voltage value of said AC power source is out of said pre-determined range.

3. The voltage regulator according to Claim 1, wherein said electrical energy storage device is a battery.

4. The voltage regulator according to Claim 1, wherein said electrical energy converter further comprises an inverter.

5. The voltage regulator according to Claim 1, wherein said AC power source is a commercial power source.

6. The voltage regulator according to Claim 1, wherein said switch set further comprises:

a first connecting configuration, wherein said first and second input ends are directly and electrically connected to said AC power source when a frequency variation amount of said AC power source is within a pre-determined range; and

a second connecting configuration, wherein said first and second input ends are directly and electrically connected to each other when said frequency variation amount of said AC power source is out of said pre-determined range.

7. An electronic power source voltage regulator, comprising:

an input port having a first input end and a second input end;

an output port having a first output end and a second output end, wherein said second output end is electrically connected to said second input end so as to provide an output voltage;

a switch set electrically connected between said input port and an AC power source;

a capacitor having a first end electrically connected to said first input end and a second end electrically connected to said first output end;

an inductor having a first end electrically connected to said first input end; and

an electrical energy converter comprising an electrical energy storage device, a first output terminal, and a second output terminal, wherein said first output terminal is electrically connected to a second end of said inductor, said second output terminal is electrically connected to said first output end, and said energy converter transfers an electrical energy of said storage device into said output voltage to be output so as to stabilize said output voltage when a significant voltage difference of said output voltage occurs.

8. The voltage regulator according to Claim 7, wherein said switch set further comprises:

a first connecting configuration, wherein said first input and second input ends are directly and electrically connected to said AC power source when a voltage value of said AC power source is within a pre-determined range; and

a second connecting configuration, wherein said first and second input ends are directly and electrically connected to each other when said voltage value of said AC power source is out of said pre-determined range.

9. The voltage regulator according to Claim 7 wherein said electrical energy storage device is a battery.

10. The voltage regulator according to Claim 7, wherein said electrical energy converter further comprises an inverter.

11. The voltage regulator according to Claim 7, wherein said AC power source is a commercial power source.

12. The voltage regulator according to Claim 7, wherein said switch set further comprises:

a first connecting configuration, wherein said first and second input ends are directly and electrically connected to said AC power source when a frequency variation amount of said AC power source is within a pre-determined range; and

a second connecting configuration, wherein said first and second input ends are directly and electrically connected to each other when said frequency variation amount of said AC power source is out of said pre-determined range.